

ABSTRACTS

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ABSTRACTS

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HortFlora Research Spectrum, 5(1) : (March 2016)

1. Transcriptome Profiling Associated to Plant Diseases: A Review

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ABSTRACT : Transcriptome profiling involves estimation of transcript's relative abundance and focuses on differentially expressed genes among various groups, which helps in identification of potential genes responsible for susceptible and resistant reaction of plant diseases. The transcriptome study enriches knowledge on host-pathogen interaction and also discloses the crucial biochemical pathways involved in defense mechanism of plants against various diseases.

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2. Concurrent Change in Photosynthetic Parameters in Kinnow Leaves under Integrated Nutrient Application

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ABSTRACT : Seasonal changes in photosynthetic characteristics, relative water content, canopy volume, leaf nutrient content in Kinnow leaves in response to integrated nutrient sources were investigated in Jhalawar district of South Eastern Rajasthan state of India during 2012-13. Interaction effect of nitrogen and vermicompost were significantly superior over other treatments in terms of better photosynthetic efficiency parameters of Kinnow mandarin plants during gestation period of 3 years age viz. photosynthesis rate, transpiration rate, stomatal conductance, photosynthetic active radiation, internal CO₂ concentration, vapour pressure deficit, leaf temperature, relative humidity. Out of all treatment combinations, T₁₅ (nitrogen @ 350 g/plant + vermicompost @ 20 kg/plant) proved significantly superior over most of treatment combinations including control in photosynthetic efficiency parameters of Kinnow mandarin plants. The photosynthetic efficiency of Kinnow mandarin plants was found maximum under T₁₅ (6.97) treatment. The better stomatal conductance, transpiration rate, relative humidity percentage of leaves, internal CO₂ concentration and leaf temperature attained optimal values at higher PAR. The application of 350 g nitrogen along with 20 kg vermicompost per plant in two split doses in Kinnow mandarin at gestation phase may improve the plant growth, developmental and photosynthetic efficiency parameters which are pre-requisite for strong framework and higher yield along with improvement in the soil health. In order to define P_n of the tree, it is necessary to consider not only photosynthetic response of the single leaf but also the overall canopy structure (leaf area index, total leaf area, leaf orientation towards radiation flux) which varies considerably according to environmental conditions. The canopy structure influences the overall P_n of the tree. Further studies on the carbon balance in relation to nutrition may contribute to growth and developmental improvement in the plants.

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3. Effect of Growth Regulators on Shoot Maturity, Flower Induction and Yield of Litchi cv Shahi

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ABSTRACT : A field experiment was conducted to induce the flowering in litchi through growth regulators in 8-9 years old litchi orchard (junior bearing stage) consecutively for 2 years comprising of 12 treatments of four PGRs i.e. GA₃ (25, 50, 75 ppm), Ethrel (100, 150 ppm), NAA (15, 25, 40 ppm), MH (15, 20, 25 ppm) and control (water spray) with three replications. Three spraying of NAA, Ethrel, MH along with control and two spraying of GA₃ was applied at pre flowering stage from 1st week of October at 30 days interval, while 3rd spraying of GA₃ was given after fruit set. Data revealed that PGRs treated plants showed comparatively lesser twig length, number of leaflet/twig, twig length and twig diameter ratio, leaflet and twig diameter ratio and more twig diameter, emergence of pure panicle and fruit yield than control (without treated plant). Plant treated with Ethrel @ 100 and 150 ppm expressed significantly higher number of pure panicle emergence (86.67 and 91.67%, respectively) and fruit yield (53.33 and 52.50 kg/plant, respectively) than other treatments. Relationship of pure panicle with fruit yield showed positive and moderately strong correlation ($r = 0.71$, $R^2 = 0.51$).

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4. Variability Study in Bael (*Aegle marmelos* Correa.) Genotypes

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ABSTRACT : Genetic variability and correlation coefficient were studied in fifty genotypes of bael fruit at Horticulture Research Centre and laboratory of the Department of Horticulture, SVPUA&T, Meerut in two consecutive years i.e., 2013-14 and 2014-15. Data were recorded on 16 morphological and qualitative traits. Invariably commercially released cultivars viz., Pant Shivani, Pant Aparna, Pant Sujata along with genotypes VB-28 and VB-23 exhibited higher yield and yield contributing traits. High values of GCV and PCV were observed for yield per tree, fruit pulp weight, fruit weight, seed weight, number of fruits per tree, ascorbic acid, skull weight, and reducing sugar. High heritability (in broad sense) along with high estimates of genetic advance (% of mean) was observed for almost all the characters viz. yield per tree, fruit weight, fruit pulp weight, skull weight, seed weight per fruit, T.S.S., ascorbic acid and total sugar. The present study also revealed the presence of great amount of genetic variability which offers bright prospects for its improvement in near future.

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5. Phenological Characterization of Low Chill Peaches for Procreation of Desirable Inherent Stuff

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ABSTRACT : The present investigation was carried out to explore the possibility of peach genotypes grafted on peach seedling rootstocks for their phenological traits to elucidate the desirable genetic stuff. Twenty one genotypes including released varieties, land races and introductions were used in this study for assessment of the traits for yielding the better one through procreation. The study was conducted from 2011 to 2013 at orchard of Department of Fruit Science, PAU, Ludhiana, Punjab. A significant variation was recorded between the traits viz., leaf length (LL), leaf breadth (LB) and leaf area (LA) among different peach genotypes. Leaf length was maximum (156.83 mm) in Tropicsweet and minimum in Redhaven (94.83 mm). The flower size (FS) was recorded maximum (44.00 mm) in genotype Shan-i-Punjab whereas the minimum was in genotype Punjab Nectarine (18.50 mm). Leaf length showed highest ($r=0.71$) correlation with leaf breadth, whereas, leaf breadth was positively and significantly correlated with leaf area, flower disc size, style number but negatively and significantly correlated with number of filaments, filament and style length. Hierarchical cluster analysis obtained by using DAR win 5.0 software allowed the assessment of dissimilarity relationship among the peach genotypes. The boots trap for each of the genotypes for different characters was run for 5000 times which

confirmed the authenticity of similarity and dissimilarity among them. UPGMA produced Dendrogram initially have three main clusters, cluster B being the largest having 9 genotypes.

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6. Improvement in Shelf-Life of Strawberry (*Fragaria* × *ananassa* Duch.) cv. Winter Dawn with Edible Coatings Enriched with Chitosan

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ABSTRACT: A lab experiment was conducted during February-March, 2015 on strawberry (*Fragaria* × *ananassa* Duch.) to study the effect of Calcium Chloride, Carboxymethyl cellulose and Chitosan on physical and chemical characters having 14 treatments treated with calcium chloride and CMC (1%, 2% and 3% each) without adding Chitosan and with Chitosan 1%. Application of Carboxymethyl cellulose 2% + Chitosan 1% to the strawberry fruits helped to maintain all the characters attributing to quality. These treatments reduced the weight loss and spoilage during storage. Under these treatments strawberry could be stored for over 12 days (fruit still reddish in colour) compared to the control which started turning turbid yellow soon after 9 days. These treatments can be used satisfactorily by the fruit growers and the fruit merchants in order to prolong the storage life of strawberry fruits up to 12 days. However, these results are only indicative and require further experimentation to arrive at more consistent and final conclusion.

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7. Response of Organic and Inorganic Source of Nutrients on Growth, Yield and Nutrients Uptake Status of Fenugreek (*Trigonella foenum-graecum*) cv. RMT-1

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ABSTRACT : A field experiment was conducted during 2012-13 at Department of Horticulture, JNKVV, Jabalpur (M.P.). The present study revealed that fenugreek cv. RMT-1 responded best in terms of yield and its attributing traits. Treatment T₆ (10 t FYM + 50% N + *Rhizobium*) was found significantly superior as compared to other treatments. Highest morphological characters i.e. plant height, number of branches per plant and dry weight plant⁻¹) and yield attributes i.e. number of pods plant⁻¹, pod length, number of seeds plant⁻¹, test weight, vegetative yield plant⁻¹ and seed yield plant⁻¹, per plot and ha⁻¹) were recorded in T₆ (10 t FYM + 50% N + *Rhizobium*) followed by T₅ (10 t FYM + 50% Nitrogen). The earliest first flowering, 50% flowering and maturity were recorded under treatment T₃ (20 t FYM). Nitrogen content and uptake was observed significantly higher with the application of T₁₂ (5 t Poultry manure + *Rhizobium*) whereas, uptake of phosphorus was maximum with T₁₂ (5 t Poultry manure + *Rhizobium*). Potassium content (seed and straw) and uptake increased with application of T₁₄ (5 t PM + 50% N + *Rhizobium*). It is revealed from the data that a significantly maximum seed yield of 23.48 q/ha was recorded in variety RMT- 1 in treatment combination T₆ (10 t FYM + 50% N + *Rhizobium*) along with net return of ₹ 65,273/ha and cost benefit ratio of 1: 3.28.

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8. Variation in Flowering Characters of Bottle Gourd

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ABSTRACT : Selection for early maturing and high yielding genotypes is desirable which in monoecious crops depend on expression of flowering characters. A study was undertaken to understand flowering behaviour of

27 genotypes of bottle gourd that would help to assume the conversion of flowers into fruits. The field experiment was carried out late in rainy season of 2013 at Horticulture Farm of Visva-Bharati University and observations were recorded for various flowering characters. Analysis of variance revealed highly significant differences among genotypes for node number of first male and female flower, days to first male and female flower opening, number of male flowers per vine, number of female flowers per vine and sex ratio. The values of flowering characters ranged for node number of first male flower (5.67-13.20), node number of first female flower (7.80-14.87), first male flower opening (50.30-82.00 days), first female flower opening (53.33-87.50 days), sex ratio (4.73-14.87), number of male flowers (38.30-90.17) and number of female flowers (3.00-14.70). Out of 27 genotypes, APBG-3 was identified as an early bearer genotype which produced male and female flower at earlier nodes on about 50 and 53 days after sowing, respectively. Surabhi recorded the lowest sex ratio but maximum female flowers in number were recorded with Kundan that can be expected to produce higher yields than others.

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9. Study on The Growth and Yield Attributes of Marigold (*Tagetes spp.*) Hybrids under Dharwad Condition*

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ABSTRACT : The present investigation was conducted during kharif 2014-15 at Floriculture Unit of New Orchard, Department of Horticulture, UAS, Dharwad with the objective to find out the suitable marigold hybrids for cultivation under Dharwad condition. There were significant differences among the hybrids with respect to vegetative and floral characters. Among the hybrids, Double Orange, Garland Orange and Sarpan-11 were found to be superior with respect to vegetative growth, flower yield and quality of marigold.

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10. Effect of Planting Geometry and Nitrogen on Growth, Flowering and Yield of Chrysanthemum (*Chrysanthemum coronarium* L.)

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ABSTRACT : A field experiment was conducted during Rabi season of 2013-14 to study the effect of planting geometry and nitrogen on growth, flowering and yield of chrysanthemum (*Chrysanthemum coronarium* L.) at College of Horticulture & Forestry, Jhalawar (Raj.). The experiment consisted of 16 treatment combinations of four spacings (S_1 - 30 cm \times 30 cm, S_2 - 30 cm \times 45 cm, S_3 - 45 cm \times 45 cm, S_4 - 45 cm \times 60 cm) and four nitrogen levels (N_0 - 0 kg, N_1 - 100 kg, N_2 - 150 kg, N_3 - 200 kg N/ha). The treatment S_4N_3 (45 cm \times 60 cm spacing + N 200 kg/ha) recorded the maximum plant spread (2643.24 cm²), number of primary branches per plant (41.90), number of leaves per plant (1013.20), leaf width (3.85 cm), leaf length (6.34 cm) and duration of flowering (64.33 days), while the treatment S_1N_3 (30 cm \times 30 cm spacing + N 200 kg/ha) had the maximum plant height (92.58 cm), flower yield per plot (11.85 kg) and flower yield per ha (182.87 q). Application of nitrogen at different levels and planting geometries significantly influenced the number of days taken for first flower bud appearance and 50 per cent flowering with the earliest first flower bud appearance (47.33 days) and 50 per cent flowering (64.83 days) at S_1 (30 cm \times 30 cm spacing). Similarly nitrogen at N_0 (N 0 kg/ha) had the earliest first flower bud appearance (46.75 days) and 50 per cent flowering (63.25 days), while nitrogen at N_3 (200 kg/ha) had the latest first flower bud appearance (55.33 days) and 50 per cent flowering (69.42 days).

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11. Influence of Different Drying Methods and Pre-treatments on Quality Parameters of Dehydrated Pole Type French Bean

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ABSTRACT : The experiment was conducted to study the effect of different drying methods and pre-treatments for maximum retention of quality parameters of pole type French bean (*Phaseolus vulgaris* L.). The results revealed that tray dryer was found superior for dehydration of pole type French bean samples pre-treated with 1 per cent KMS without blanching which recorded higher total soluble solids (TSS), low titrable acidity (TA) and marginally low crude protein content compared with other drying methods.

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12. Response of Hybrid Orchid (*Dendrobium* spp.) cv. Sonia to Application of Micronutrients

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ABSTRACT : An experiment on response of hybrid orchid, *Dendrobium* spp., cv. 'Sonia' to selected micronutrients was conducted in the Experimental Farm, Department of Horticulture, Assam Agricultural University, Jorhat during 2012 to 2013. The experiment was conducted in shade net house with eight treatments each replicated thrice. Micronutrient treatments viz., T₁- Zinc 500 ppm, T₂-Zinc 750 ppm, T₃-Zinc 1000 ppm, T₄-Manganese 200 ppm, T₅-Manganese 400 ppm, T₆-Boron 100 ppm and T₇-Boron 200 ppm were applied as foliar spray at an interval of 15 days along with fertilizer mixture 19 All @ 2 g per liter (control) sprayed twice a week. Among the micronutrient treatments, Zinc 1000 ppm (T₃) was found superior in respect of the parameters viz., pseudo bulb height (29.85), number of leaves/plant (7.08), leaf area (68.66 cm²), inter nodal length (5.26 cm), cane girth (2.43 cm), spike length (28.91 cm), number of florets/spike (4.03), flower spike yield /coco block/year (5.53), number of flowering canes / clump (2.00), duration of flowering (149.20 days), self life (52.22 days), vase life (37.00 days), total soluble sugar (107.24 mg/g DW), soluble protein (436.39 mg/g FW), net assimilation rate (0.35 mg/cm²/day) and total chlorophyll content (0.83 mg/g FW) while treatment T₂(RDF + Zn 750 ppm) recorded best for days to flower bud appearance (133.37 days) and days to harvest of spike (3.47 days).

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13. Effect of Foliar Application of Zinc and Boron on Yield and Quality of Pomegranate (*Punica granatum* L.) cv. Ganesh under Subtropical Conditions of Garhwal Hills

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ABSTRACT : An experiment was conducted on ten year old pomegranate trees cv. Ganesh at Horticultural Research Centre, Chauras, HNB Garhwal University, Srinagar Garhwal, Uttarakhand during summer season 2012 to find out the effect of foliar application of zinc and boron on yield and quality of pomegranate (*Punica granatum* L.) cv. Ganesh. The experiment was laid out in randomized block design with three replications. The treatment consisted of two foliar applications of Zinc sulphate and Boric acid with their combinations viz., T₁ (Zn @ 0.4%), T₂ (Zn @ 0.5%), T₃ (Zn @ 0.6%), T₄ (B @ 0.4%), T₅ (B @ 0.5%), T₆ (B @ 0.6%), T₇ (Zn+B @ 0.4% each), T₈ (Zn+B @ 0.5% each), T₉ (Zn+B @ 0.6 % each) , and T₁₀ (control). The findings revealed that the average values for fruiting percentage (67.83 %), weight of fruits (202.88 g), length of fruits (7.00 cm), volume of fruits (213.33 ml), fruit yield (35.16 kg/tree), acidity of fruits (0.34 %) and vitamin C content of fruits (48.00 mg/100g) were found to be the highest under the treatment T₇ (Zn+B @ 0.4 % each). The maximum fruit diameter (6.63 cm), specific gravity (0.98 g/cm³) and vitamin A content (14.87 ig/100g) were observed under the treatment T₅ (B @ 0.5%). The highest value for TSS content (13.33 °Brix) of fruits was recorded under treatment T₄ (B @ 0.4%). The treatment combination of boric acid and zinc sulphate @ 0.4 % each gave superior fruit yield and quality of pomegranate.

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14. Intensity of Anthracnose Disease (*Colletotrichum capsici* Sydow.) on Chilli Crop in Jaunpur District Region of Eastern U.P.

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ABSTRACT: Anthracnose, caused by *Colletotrichum capsici*, is one of the most destructive diseases of chilli which causes a chief hindrance in chilli production. Typical anthracnose symptoms on chilli fruit appear as sunken necrotic tissues with concentric rings of acervuli. To assess the incidence and severity of anthracnose disease on chilli crop, a survey was conducted in 5 chilli growing areas of Jaunpur district of Eastern Uttar Pradesh. During the survey it was observed that percentage of incidence was more in green fruit and leaves than older parts.

Published in : HortFlora Research Spectrum, 5 (1) : 65-68 (March 2016)

15. Estimates of Genetic Components and Related Statistics of Diallel Cross in Vegetable Pea (*Pisum sativum* L.)

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ABSTRACT : The experiment was carried out at Farm of Krishi Vigyan Kendra, Pampoli, East Kameng, Arunachal Pradesh during 2012-13. Generation means analysis was carried out to estimate the nature and magnitude of gene action in order to formulate breeding strategy for identifying the segregates with desirable horticultural traits and resistant to powdery mildew disease. The testing of validity of the assumptions is based on estimated values of t^2 and regression coefficient (b) based on F_5 . It is clear from the table that t^2 was significant for pod length, pod width and 100 grain weight which reflect the failure of one or few assumptions.

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16. Field Efficacy of Some Insecticides and Biopesticides for the Management of Shoot Gall Psylla, *Apsylla cistellata* Buck.

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ABSTRACT: Studies were conducted to study the field efficacy of insecticides, botanicals and entomopathogenic fungi for the control of shoot gall psylla, *Apsylla cistellata* Buck and subsequently their effect on fruit set and fruit yield of mango. Maximum per cent embryo mortality and minimum number of galls/twig and nymphs/gall were recorded in monocrotophos followed by quinalphos whereas minimum per cent embryo mortality and maximum number of galls/twig and nymphs/gall were observed in nimbecidine, neem seed kernel extract, *Baeauveria bassiana* and control. Maximum fruited shoot, fruits harvested and fruit yield were recorded in monocrotophos and quinalphos whereas about zero fruit yield was recorded in nimbecidine, neem seed kernel extract, *B. bassiana* and control.

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17. Effect of Biofertilizer on Growth and Yield of Banana cv. Grand Naine (Ratoon Crop) in West Central Zone of Odisha

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ABSTRACT : A field experiment was conducted to access the effect of different biofertilizers on growth and yield of ratoon crop of tissue cultured banana cv. Grand Naine. The experiment was laid out in RBD with 5 treatments, each replicated four times. The experiment consisted the application of recommended dose of fertilizers (RDF) and RDF was combined with organic manure and biofertilizers (*Azospirillum*, *Azoctobactor*, Phosphorus solubilising bacteria) at different combinations to know their effect on growth and yield of ratoon

banana viz : T₁ (control), T₂ (100% RDF, 300:100:300 g NPK/plant), T₃ (100% RDF +75g biofertilizers: *Azotobacter*, *Azospirillum* & PSB 1kg each in 25 kg of vermicompost in the ratio of 1:1:1), T₄ (100% RDF +100 g biofertilizer: *Azotobacter*, *Azospirillum* & PSB 1kg each in 25 kg of vermicompost in the ratio of 1:1:1) and T₅ (100% RDF +125 g biofertilizer : *Azotobacter*, *Azospirillum* & PSB 1kg each in 25 kg of vermicompost in the ratio of 1:1:1). There was a positive response in plant growth in term of height and girth. Application of 100% RDF +125 g of biofertilizers in 3 split doses (T₅) recorded better growth in tissue culture banana follow by T₄ and T₃ and the treatment recorded better physiological activity in term of ascorbic acid content and pulp: peel ratio. Yield attributing characters like bunch weight, number of hands per bunch and number of finger per bunch also maximum in T₅.

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18. Loss assessment by Releasing Hoppers on Young Shoots and Flowering and Fruited Panicles of Mango

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ABSTRACT : Loss assessment study by hopper on shoots showed that per cent leaf infestation per shoot increased significantly with the increase in hopper population. Maximum infestation (91.47%) occurred on shoots having 20 hoppers per shoot, whereas those with 10 and 15 hoppers per shoot suffered more or less 50 per cent infestation. Number of hopper eggs per leaf also varied significantly with the increase in hopper population. Maximum eggs (15.40 per leaf) were recorded on leaves where 20 hoppers per shoot were released. Per cent increase in shoot length was also affected significantly with the increase in hopper population. It was minimum (4.88) where 20 hoppers per shoot were released. However, the shoots with 0 and 5 as well as 10 and 15 hoppers per panicle were also at par. Per cent reduction in fruit set was maximum (95) on panicles where 20 hoppers per panicle were released. However no significant differences were observed on panicles where hopper populations were 10, 15 and 20. Per cent fruit drop was maximum (81.25) where, 30, 35 and 40 hoppers per panicle were released and minimum (8.81) where no hopper was released. Percent reduction in fruits weight per panicle was maximum (84.58) where 40 hoppers per panicle were released and minimum (14.60%) with 5 hoppers per panicle.

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19. Effect of Nitrogen, Phosphorus and Potassium on Growth, Yield and Quality of Tomato Grown in Open Condition

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ABSTRACT : The experiment on effect of NPK on growth, yield and quality of tomato (*Solanum lycopersicum* L.) grown under open condition was conducted at Department of Horticulture, SHIATS, Allahabad, (U.P.) during Rabi season 2014-15. The seedling of cultivar undertaken for research was Hybrid GS-600 and fertilizers applied in the experiment were Urea, SSP and MOP. The experiment was laid out in RBD with 3 replications and 9 treatments. The results revealed that significantly maximum plant height (165.70 cm), number of leaves/plant (114.52) and number of fruit clusters (7.31) were produced in T₇ (140:80:60 kg/ha NPK). Number of fruits/ cluster (7.30), number of fruits/plant (52.85), fruit weight (76.41g) and fruit yield/ plant (4.03 kg) and per hectare (0.952 t/ha) were recorded maximum in T₅ (120:80:75 kg/ha NPK). Maximum TSS (4.29 °Brix) and shelf life (18.70 days) were recorded in T₆ (120:80:90 kg/ha NPK) under Allahabad agro climatic conditions.

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20. Pre-harvest Fruit Bagging Improves Fruit Quality of Mango in Doon Valley

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ABSTRACT : Bagging in different fruit crops is beneficial because it improves appearance of fruit along with quality. A trial was conducted on 15 year young mango (cv. Mallika) orchard grown on degraded lands during 2014-015. The three different types of paper bags (Plastic bag, Blue paper, News paper) with control (Without bagging) were used for bagging of fruits after fruit formation (pre-harvest bagging) each with 100 no. of fruits for assessing incidence of insect, disease, fruit cracking and fruit blackening. Blue paper bagged fruits were recorded maximum improvement in fruit appearance like least insect-pest and disease attack in the fruit over un bagged fruits in Malika mango. Similarly, minimum fruit cracking and blackening was recorded in bagged treatment over unbagged treatment. Hence, fruit bagging in mango with blue paper bag is recommended for commercial use to the growers to escape attack of insect- pests and diseases, fruit cracking, and blackening.

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21. Effect of Type of Cuttings and Concentration of NAA on the Rooting Performance of Jasmine (*Jasminum humile*)

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ABSTRACT : The experiment was carried out during year 2014 at the field Horticulture Garden of C. C. R. (P. G.) College, Muzaffarnagar (U.P.). The experiment comprised of the types of cuttings and NAA concentration. The type of cuttings (hard wood, semi hard wood and soft wood) were treated at 0 ppm, 1500 ppm, 3000 ppm and 4500 ppm of NAA. Treated cuttings were planted in factorial R.B.D. with 12 treatments. NAA at 4500 ppm caused earlier sprouting over control. NAA at 1500 ppm improved the length of the shoot and number of leaves. Number of roots, length of the roots, rooting percentage and survival percentage were improved at 4500 ppm in case of *Jasminum humile*. While mortality percentage increased under hard wood cutting at 1500 and 3000 ppm concentration of NAA. Moreover, mortality percentage was highest in control. Semi hard wood cuttings treated with 4500 ppm NAA proved better than all other treatments.

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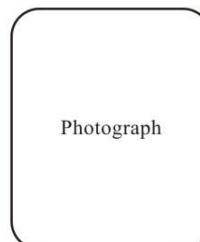
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